

IN THE CLAIMS:

1-10. (Canceled)

11. (Original) An isolated nucleic acid comprising a nucleotide sequence that:

(a) encodes a polypeptide according to SEQ ID NO: 4; or

(b) encodes a polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

12. (Currently amended) The isolated nucleic acid of Claim 11, wherein said nucleic acid hascomprises a nucleotide sequence according to SEQ ID NO: 2 or the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

13. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence having more than 81.3% identity to SEQ ID NO: 2 or the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761, wherein said nucleotide sequence encodes a functional melantocortin-4 receptor.

14. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence encoding a functional melantocortin-4 receptor having more than 98.1% identity to SEQ ID NO: 4 or to the polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

15. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence encoding a functional melantocortin-4 receptor which comprises an ECD extra-cellular domain of a canine MC4R corresponding to amino acids 1-46, 98-124, 187-191, or 268-279 of SEQ ID NO: 4 or of the polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

16. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence encoding a functional melantocortin-4 receptor which comprises a CD cytoplasmic domain of a canine MC4R corresponding to amino acids 69-77, 147-163, 216-244, or 302-333 of SEQ ID

NO: 4 or of the polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

17. (Currently amended) A nucleotide vector comprising the nucleic acid of Claim ~~1, 2, 3, 4, 5, 6, 7, 8, 9, 10,~~ 11, 12, 13, 14, 15, ~~or 16,~~ 70 or 71.

18. (Currently amended) An expression vector comprising the nucleic acid of Claim ~~1, 2, 3, 4, 5, 6, 7, 8, 9, 10,~~ 11, 12, 13, 14, 15, ~~or 16,~~ 70 or 71 in operative association with a nucleotide regulatory element that controls expression of the polypeptide encoded by said nucleotide sequence.

19. (Currently amended) A genetically engineered host cell comprising the nucleic acid of Claim ~~1, 2, 3, 4, 5, 6, 7, 8, 9, 10,~~ 11, 12, 13, 14, 15, ~~or 16,~~ 70 or 71.

20. (Currently amended) A genetically engineered host cell comprising the nucleic acid of Claim ~~1, 2, 3, 4, 5, 6, 7, 8, 9, 10,~~ 11, 12, 13, 14, 15, ~~or 16,~~ 70 or 71 wherein said nucleic acid is in operative association with a nucleotide regulatory element that controls expression of said nucleotide sequence in the host cell.

21-23. (Canceled)

24. (Original) A method for producing a recombinant polypeptide, comprising:

- (a) culturing a host cell transformed with the expression vector of Claim 18 and which expresses the recombinant polypeptide; and
- (b) recovering the recombinant polypeptide from the cell culture.

25-69. (Canceled)

70. (New) An isolated nucleic acid consisting of a nucleotide sequence encoding an extra-cellular domain of a canine MC4R corresponding to amino acids 1-46, 98-124, 187-191, or

268-279 of SEQ ID NO: 4 or of the polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.

71. (New) An isolated nucleic acid consisting of a nucleotide sequence encoding a cytoplasmic domain of a canine MC4R corresponding to amino acids 69-77, 147-163, 216-244, or 302-333 of SEQ ID NO: 4 or of the polypeptide encoded by the canine MC4R clone as deposited with the ATCC and having ATCC Accession No. PTA-1761.